

in support thereof are provided.

It is respectfully submitted that the above amendments introduce no new matter within the meaning of 35 U.S.C. § 132.

### **Objection to the Drawings**

The Examiner objected to the drawings as not showing residual current I; not having labels in the boxes of Figs. 1-2; and for not showing a Hart® interface as originally claimed in claim 2.

### **RESPONSE**

Submitted herewith is a Letter to the Draftsperson transmitting, subject to the Examiner's approval, proposed revisions to the drawings of Figs. 1-2.

Fig. 1 is amended to added a reference sign to the symbol for originally shown residual current I; and Figs. 1-2 have been amended to add appropriate labels to the various boxes.

With respect to the Hart® interface, this feature has been canceled from claim 2 thereby rendering this objection to the drawings moot.

Accordingly, reconsideration and withdrawal of the objections is respectfully requested.

### **Objection to the Specification**

The Examiner objected to the specification as not having

appropriate section headings and for what the Examiner perceived as a duplicate line.

**RESPONSE**

The specification has been amended to add section headings as suggested by the Examiner.

With respect to the objected to line at page 3, line 8, (and the similar, but not objected to line at page 4, lines 5-6) and in view of the section headings added hereby, Applicant has amended these lines to make clear that these lines are introductory paragraphs to the detailed descriptions of the first and second embodiments, respectively, and are not duplicates of the brief descriptions of the several views of the figures as construed by the Examiner. As herein amended Applicants respectfully submit the lines are not duplicates of previously recited materials.

Accordingly, reconsideration and withdrawal of the objections is respectfully requested.

**Claim Objections**

The Examiner objected to claim 3 due to an informality.

**RESPONSE**

Applicants thank the Examiner for the suggested correction.

Claim 3 has been amended as suggested by the Examiner to correct an error of antecedent basis.

Accordingly, reconsideration and withdrawal of the objection is respectfully requested.

**Rejections Under 35 U.S.C. § 112, 2<sup>nd</sup> Paragraph**

Claims 2-5 were rejected as indefinite.

**RESPONSE**

Claim 2 has been amended by deleting reference to a "Hart® interface" thereby obviating the Examiner's ground of rejection.

Claim 3 has been amended to change the word "pole" to --terminal-- so as to clarify that reference is being made to a point at which a circuit connection is made. Claim 3 has further been amended by adding the limitation that the voltage longitudinal controller of claim 1 comprises the field effect transistor, transistor, and resistors as claimed in claim 3; and with the original limitations of claim 3 describing the various circuit connections.

As amended it is respectfully submitted that each of claim 1-5 is in compliance with section 112.

Accordingly, reconsideration and withdrawal of the rejections is respectfully requested.

**Rejection under 35 U.S.C. § 102**

Claims 1 and 2 were rejected as anticipated by Fig. 2 of the Walker '411 patent.

**RESPONSE**

Applicant respectfully traverses the rejection.

The test for anticipation under section 102 is whether each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); MPEP §2131. The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989); MPEP §2131. The elements must also be arranged as required by the claim. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990).

The present invention, as claimed in independent claim 1, is directed to a circuit configuration for voltage supply of a two-wire sensor. The two-wire sensor is connected to a supply voltage source via first and second connection lines. A voltage longitudinal controller is positioned in the first connection line. A controller output is connected to the second connection line via at least one limiting diode. A current-limiting resistor is positioned in one of the two connection lines between the two-wire sensor and the limiting diode.

More particularly, as claimed in claim 1, the controller output is connected to the second connection line via a series circuit comprising two limiting diodes. A joint node of the two limiting diodes is connected to a control input of the voltage longitudinal controller.

In contrast, Applicants initially point out that the Walker '411 patent discloses in the cited Fig. 2 a sensor having 3 wire connections: (1) sensor control, (2) V+ to sensor, and (3) ground, not a two-wire sensor as claimed in claim 1.

The Examiner asserts that the full wave bridge 304 of the Walker's Fig. 2 is a voltage longitudinal controller. Applicants respectfully submit that the Examiner's assertion is incorrect since a controller, such as the claimed voltage longitudinal controller, inherently needs a control input in response to which the controller controls its output. The presently claimed voltage longitudinal controller therefore claims a control input by which the output voltage is controlled.

The full wave bridge 304 shown in Fig 2 of the Walker '411 patent does not have a control input. Bridge 304 has inputs from supply 300 with rectified outputs provided to the remainder of the connected circuit. No feedback is provided from any point of the connected circuit to a control input of the bridge which can cause the bridge to control its output.

The Examiner asserts that the Walker '411 patent discloses in Fig. 2 that resistor 316 is a current limiting resistor and that thyristor 314 is a limiting diode. Applicants respectfully disagree. Assuming *arguendo* that thyristor 314 operates as a limiting diode, resistor 316 is not connected between thyristor 314 and the sensor, as claimed in claim 1, but is connected in parallel across the anode and gate of the thyristor; whereas the

term "connected between" clearly imparts being serially connected.

Moreover, Fig. 2 of the Walker patent does not disclose two limiting diodes connected in series. Walker does disclose one diode 326 which is connected in series to thyristor 314; however, such a thyristor includes in addition to an anode and a cathode, as in a diode, but a gate terminal as well whereby such thyristor 314 is capable of being switched on and off.

Even if thyristor 314 is viewed as a kind of diode, contrary to claim 1, the common node connection point between thyristor 314 and diode 326 is not connected to a control input of the longitudinal voltage controller as claimed in claim 1, but is instead connected to the V+ terminal of the sensor 332 through the parallel combination of diodes 322 and 324.

As a consequence of the above described differences in the circuit configuration of Walker's Fig. 2 as compared to the presently claimed invention, the circuit according to the instant claim 1 is self controlling, which means that the sensor is not part of the control function. In contrast, due to the third-wire connection (sensor control) of sensor 332 of Walker's Fig. 2 such self control is not possible.

Additionally, the circuit according to pending claim 1 provides continuous control by a linear switching controller which is connected as the longitudinal controller. Walker, however, uses thyristor 314 which can only be switched on and off.

Finally, with the presently claimed invention and its two

diodes D1 and D2 it is possible to control and limit, in a way, that only a very little current flows through the combination of the two diodes. In contrast, Fig. 2 of Walker only has one diode 326 that limits the current, but which does not control it.

In view of the above, Applicants respectfully submit that the Walker patent does not disclose each and every element as set forth in the claim shown in as complete detail as is contained in the claim with the elements arranged as required by the claim. Claim 1 is therefore asserted to be patentable over the Walker '411 patent. Claims 2-5, each ultimately dependent from claim 1, are asserted to be patentable over the Walker patent for at least the same reasons that claim 1 is patentable thereover.

Accordingly, reconsideration and withdrawal of the rejections is respectfully requested.

#### **MISCELLANEOUS**

The references cited by the Examiner have been reviewed and it is agreed that the design claim as originally presented and as herein resubmitted are patentable thereover.

#### **CONCLUSION**

In light of the foregoing, Applicant submits that the application is in condition for allowance. If the Examiner believes the application is not in condition for allowance, Applicant respectfully requests that the Examiner contact the

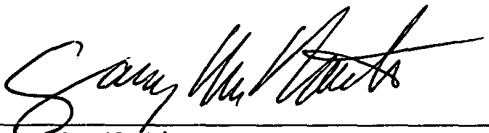
undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

Respectfully submitted,

**NATH & ASSOCIATES PLLC**

Date: August 1, 2003

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**Attachment "A"**  
(Amended Specification)

Please amend the specification at page 1, following the title and before paragraph 0001, by inserting the following section headings:

FIELD OF THE INVENTION

Please amend the specification at page 1, after paragraph 0001, and before paragraph 0002, by inserting the following section headings:

BACKGROUND OF THE INVENTION

Please amend the specification at page 2, after paragraph 0004, and before paragraph 0005, by inserting the following section headings:

SUMMARY OF THE INVENTION

Please amend the specification at page 3, paragraph 0009, as follows:

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS ~~in the~~  
drawings

Please amend the specification at page 3, after paragraph 0011, and before paragraph 0012, by inserting the following section headings:

DETAILED DESCRIPTION OF THE INVENTION

Please amend the specification at page 3, paragraph 0012, as follows:

A ~~FIG. 1 shows a~~ block diagram of a first embodiment of the invention is shown in Fig. 1.

Please amend the specification at page 4, paragraph 0015, as follows:

A ~~FIG. 2 shows a~~ block diagram of a circuit configuration according to a second embodiment of the invention is shown in Fig. 2.

**Attachment "B"**  
(Pending Claims)

1. (Currently Amended) Circuit configuration for voltage supply of a two-wire sensor (S) which is connected to a supply voltage source (U) via a first connection line (V1) in which a voltage longitudinal controller (SR) is positioned, and a second connection line (V2),

wherein ~~the~~ a controller output is connected to the second connection line (V2) via at least one limiting diode (D1), and wherein a current-limiting resistor (R1) is positioned in one of the two connection lines (V1) between the two-wire sensor (S) and the limiting diode (D1), characterized in that:

the controller output is connected to the second connection line (V2) via a series circuit comprising two limiting diodes (D1, D2), and that ~~the~~ a joint node of the two limiting diodes (D1, D2) is connected to ~~the~~ a control input of the voltage longitudinal controller (SR).

2. (Currently Amended) Circuit configuration as defined in claim 1, characterized in that ~~the two-wire sensor (S) is fitted with a so-called HART® interface, and a HART® resistor is positioned in one of the two connection lines (V1, V2).~~

3. (Currently Amended) Circuit configuration as defined in

claim 1, characterized in that:

voltage longitudinal controller (SR) comprises a field effect transistor (T1), a transistor (T2), and resistors (R2, R3, R4) wherein:

a ~~pole~~ terminal of the supply voltage source (U) is connected to an input of two-wire sensor (S) via a HART® resistor (RH), ~~a the~~ drain source path of ~~a the~~ field effect transistor (T1), and the current-limiting resistor (R1) connected serially, the other input of ~~which the two-wire~~ sensor is connected to ~~the an~~ other ~~pole~~ terminal of the supply voltage source (U) via the second connection line (V2), ~~that~~

the HART® resistor (RH), the drain source path of the field effect transistor (T1) and the current-limiting resistor (R1) are positioned in the first connection line (V1), ~~that~~

the source electrode of the field effect transistor (T1) is connected to the second connection line (V2) via a series circuit comprising a first and second limiting diode (D1, D2), ~~that~~

a first resistor (R4) is ~~positioned~~ connected in parallel to the second limiting diode (D2), ~~that~~

one the joint node of the second limiting diode (D2) and the first resistor (R4) is connected to ~~the a~~ base of ~~a the~~ transistor (T2), ~~the a~~ collector of ~~which the transistor (T2)~~ is connected to ~~the a~~ gate electrode of the field effect transistor (T1) via a second resistor (R3), and ~~the an~~ emitter of ~~which the transistor (T2)~~ is connected to the second connection line (V2), and ~~that~~



the gate electrode of the field effect transistor (T1) is connected to the source electrode thereof via a third resistor (R2).

4. (Original) Circuit configuration as defined in claim 3, characterized in that at least one additional limiting diode each (D3, D4, D5, D6) is connected parallel to each limiting diode (D1, D2).

5. (Currently Amended) Circuit configuration as defined in claim 4, characterized in that the series connected limiting diodes (D1 through D6) are oppositely polarized ~~poled~~.